

## CLAIMS:

1. An X-ray detector module (1) which includes a carrier (3) that forms cells (4) arranged in the form of a grid and is made of a material that is essentially non-transparent to X-rays, wherein a mass of scintillator particles (6) that are embedded in a binder (7) and emit light in the range of a longer wavelength  $\lambda$  in response to the absorption of X-rays is provided in the cells (4), and wherein the difference between the refractive index of the scintillator particles (6) and the refractive index of the binder (7) for the wavelength  $\lambda$  amounts to less than 20% and preferably less than 10%.
2. An X-ray detector module as claimed in claim 1, characterized in that the binder contains  $\text{TiO}_2$ , notably in the form of rutile or anatase and/or a component of  $\text{ZnO}$ ,  $\text{ZnS}$ ,  $\text{ZrO}_2$ ,  $\text{BaSO}_4$  and/or  $\text{PbCO}_3$ .
3. An X-ray detector module, notably as claimed in claim 1 or 2, which includes a carrier (3) that forms cells (4) arranged in the form of a grid and is made of a material that is essentially non-transparent to X-rays, wherein a mass of scintillator particles (6) that are embedded in a binder (7) and emit light in the range of a longer wavelength  $\lambda$  in response to the absorption of X-rays is provided in the cells (4), and wherein the scintillator particles (6) have a grain size of less than 200 nm and preferably less than 100 nm.
4. An X-ray detector module as claimed in at least one of the claims 1 to 3, characterized in that the carrier (3) consists of a metal, of a synthetic material that is filled with a metal and/or of glass that can be photostructured.
5. An X-ray detector module as claimed in at least one of the claims 1 to 4, characterized in that the surface of the carrier (3) is provided at least partly with a reflector layer (2) which has a degree of reflection of more than 90% for the light in the range of the wavelength  $\lambda$ .
6. An X-ray detector module as claimed in at least one of the claims 1 to 5,

characterized in that the volume of the scintillator particles (6) amounts to from 50% to 70% of the volume of the mass that is provided in the cells (4).

7. An X-ray detector module as claimed in at least one of the claims 1 to 6,  
5 characterized in that the height (h) of the mass embedded in the cells (4) amounts to from 0.1 mm to 5 mm.

8. An X-ray detector module as claimed in at least one of the claims 1 to 7,  
characterized in that the width (b) as measured in the plane of the array of the cells (4) is  
10 smaller than the height (h) of the cells.

9. An X-ray detector module as claimed in at least one of the claims 1 to 8,  
characterized in that the scintillator particles (6) contain rare earth oxide or oxisulphides with  
Pr, Ce, Tb and/or Eu as a doping material, notably  $\text{Gd}_2\text{O}_2\text{S}:\text{Pr}$  or  $\text{Gd}_2(\text{SO}_4)\text{O}:\text{Ce}$ , and/or alkali  
15 halides such as  $\text{CsI}:\text{Tl}$ ,  $\text{CsI}:\text{Na}$  or  $\text{NaI}:\text{Tl}$  and/or  $\text{CdWO}_4$ .

10. An X-ray detector module as claimed in at least one of the claims 1 to 9,  
characterized in that to one side of at least one cell (4) there is provided a detector (5) for  
converting photons from the range of the longer wavelength  $\lambda$  into an electrical signal.

11. An X-ray detector module as claimed notably in one of the claims 1 to 10,  
which detector module includes a carrier (3, 3') that forms cells (4) arranged in the form of a  
grid and consists of a material that is essentially non-transparent to X-rays, wherein the cells  
(4) have a tubular shape and only a sub-volume of the cells contains a scintillator material (6,  
25 7).

12. A method of manufacturing an X-ray detector module (1) as claimed in at least  
one of the claims 1 to 11, where a free-flowing mixture of a binder (7) and scintillator  
particles (6) is deposited at least once in the cells (4) of a carrier (3), after the mixture is  
30 densified by thermal treatment and/or by UV irradiation.